

<b>The University of British Columbia Land and Building Services</b>		<b>Disposal of Ballasts (PCB and Non-PCB)</b>	
<b>Work Procedure</b>		<b>I-B-09</b>	
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**1.0 POLICY:**

This procedure is to be used by Plant Operations personnel and outside Contractors to ensure that they are disposing of lamp ballasts (PBC and Non-PCB) in an accountable, safe, and acceptable manner.

**2.0 OBJECTIVE:**

The procedure is necessary to ensure the safe well being of workers, to hold them accountable for correct identification of lamp ballasts, and to comply with Canada Department of the Environment, Canadian Environmental Protection Act and the B.C. Ministry of the Environment, Special Waste Regulation.

**3.0 REFERENCES:**

UBC Clean-up Procedure for PCB Contaminated Waste – Dept. of Occupational Health & Safety, C.P.&D. UBC Technical Guidelines (Electrical, Div. 16, Section 16502)

**4.0 GUIDELINES:**

The Electrician or Contractor shall be responsible for identifying lamp ballasts (PCB or Non-PCB) during repairs or renovation where old fluorescent luminaries/fixtures are replaced or upgraded.

The Electrician or Contractor shall identify a ballast containing or not containing PCB's by consulting the following identification chart based on the manufacturer.

**5.0 PROCEDURE:**

The following procedure shall be followed when handling lamp ballasts:

- 5.1 Turn off the electrical supply and ensure it cannot be turned on through the use of Lock-Out Policy I-B-2
- 5.2 Visually inspect the lamp ballast for leaks, which will appear as black asphalt-like material. PCB's are used in the insulating of oil of the capacitor located inside the ballast. Therefore, the asphalt-like material will appear oily, if contaminated.

- 5.3 Wear rubber gloves and wipe off any leakage with a rag and hydrocarbon solvent, such as paint thinner.
- 5.4 Those ballasts containing PCB's (based on the identification chart) or a ballast that cannot be identified, shall be placed inside a 5 gallon metal pail. The 5 gallon metal pails can be obtained from the Plant Operations Stores located in the University Services Building and shall be labelled **PCB Ballasts**.
- 5.5 Those ballasts not containing PCB's (based on the identification chart), shall also be place in 5 gallon metal pails obtained from the Plant Operations Stores located in the University Services Building and shall be labelled **Non-PCB Ballasts**.
- 5.6 The ballasts containing **PCB's** shall have their lead wires cut back to the metal ballast enclosure prior to being placed inside the metal pail.
- 5.7 Pails containing the lamp ballasts (PCB or Non PCB) shall be properly sealed before transportation (by securing lid tabs)
- 5.8 The Electrician or Contractor shall deliver the sealed and labelled 5-gallon **PCB** pails directly to the **Environmental Services Facility** (Chemical Waste), Dept. of Health, Safety & Environment located at South Campus. Contact phone number is 822-6306. The Electrician shall provide a written list, identifying the type(s), total quantity of PCB ballasts, work order number(s) associated with the job, and crew number. Label each pail with the work order number(s) and crew number.
- 5.9 The Electrician or Contractor shall deliver the sealed and labelled 5 gallon **Non-PCB** pails to the **Waste Management Shop**, Dept. of Plant Operations located at 6381 Stores Rd. Contact phone number for Head Labourer is 822-9619. The Electrician shall provide a written list, identifying the type(s), total quantity of Non PCB ballasts, work order number(s) associated with the job, and crew number. List must accompany pail(s). Label each pail with the work order number(s) and crew number.
- 5.10 If working with **PCB ballasts**, the rubber gloves, cleanup rags and other items including the lead wires exposed to the leaking material shall be placed inside a plastic bag and sealed with at twist tie.
- 5.11 If working with **PCB ballasts**, the aforementioned plastic bag shall be placed in a PCB labelled 5 gallon metal pail of its' own and delivered with the other PCB pails.
- 5.12 Any skin area that comes into contact with PCB's or contaminated asphalt-like material should be washed thoroughly with soap and water.

## **6.0 ACCOUNTABILITY**

Shops and Contractors will be held financially accountable for misidentified ballasts. Supervisors and/or heads should ensure that staff or contractors are properly trained on ballast identification and periodically check that personnel are identifying ballasts correctly and following correct work procedures. Personnel that have not been trained on ballast identification and ballast removal procedures should not be handling ballast disposal.

## **UNIVERSITY OF BRITISH COLUMBIA**

### **CLEAN-UP PROCEDURES FOR P.C.B. CONTAMINATED WASTE**

This procedure is intended to assist individuals who are required to clean up areas, which may be contaminated by P.C.B.'s as a result of a failure of a fluorescent lamp ballast.

Fluorescent lamp ballasts consist of two parts; the transformer or coil, and the capacitor, which is separately sealed in a metal can.

Not all ballasts contain P.C.B.'s. In ballasts manufactured before 1980 P.C.B.'s were used in ballast capacitors. Normally, the P.C.B.'s remain sealed within the capacitor can, except during catastrophic failure.

The inside of the ballast housing is filled with silica-asphalt mix. When this is heated it may ooze out from the corners of the ballast and drip into the covering channel. Many people are concerned that this material may contain P.C.B.; in general, it does not. Under normal circumstances, there is very little likelihood of P.C.B. contaminated oil coming out of the ballast. When the asphalt is cooled to room temperature it will reharden, where the P.C.B. oil from a capacitor will remain as heavy oil. This, in conjunction with the age of the ballast, gives a rough indication of whether or not P.C.B. may be present.

#### **Protective Equipment**

Clean-up of the P.C.B.'s from ballast leakage incident should be conducted by persons who are trained in this procedure and are properly equipped to handle resulting P.C.B. waste. Clean-up personnel should take care to avoid contact with P.C.B. and volatile clean-up. Protective equipment should be worn at all times during clean-up. The recommended equipment is:

1. Disposable cover-alls to cover arms and legs.
2. Disposable gloves which cover hands and wrists.
3. Rubber boots.
4. Tight fitting chemical goggles or face shield.

All protective clothing should be made of P.C.B. resistant material, which is impervious to solvents used in, clean-up.

#### **Clean-up Equipment and Materials**

The clean-up operation will require disposable rags, dust pans and a 5 gal. Steel container with a lid that can be sealed.

The steel container is used to receive and transport all P.C.B. waste, rags, disposable gloves and the lamp ballast.

A solvent, such as turpentine, mineral oil, kerosene or similar solvent is used to soak the rags used to wipe up the P.C.B. oil. Only about one liter of solvent will be required.

The oil-absorbent material such as sawdust, vermiculite, activated charcoal or a commercial absorbent material such as Imbiber Beads from Dow chemical may be required to absorb pooled P.C.B. oil. About one liter of material should be sufficient.

### **Clean-up Procedures**

The first step in clean-up is to control further spreading of any spill. Next, notify the person in charge of the laboratory or facility and the Office of Occupational Health and Safety at 822-2029. The facility should be closed to personnel except those involved in clean-up.

The P.C.B.'s should be removed from the contaminated area with the use of P.C.B. absorbent materials. These materials, if spread on a P.C.B. spill, create a solid product which is swept or shoveled into the 5 gallon container.

After the liquid P.C.B.'s have been absorbed, the affected areas must be thoroughly decontaminated. Surfaces that do not absorb P.C.B. such as steel, P.C.B. resistant concrete flooring and counters, should be decontaminated by thoroughly rinsing with solvent such as turpentine, mineral oil or kerosene, until the P.C.B. contaminated solvents and cleaning rags should be disposed of as P.C.B. waste.

Material that can absorb P.C.B.'s such as wood, asphalt, concrete, soil and sediment should be examined to determine the depth of P.C.B. penetration. The contaminated surface layer should be removed to a depth such that underlying material is free of P.C.B. material, which is removed, should be dealt with as P.C.B. waste when it contains more than 50 p.p.m. P.C.B.

To clean up the small amount of P.C.B.'s contained in a ballast capacitor, a small amount of chemical absorbent material is required. This material should be placed in a plastic bag, and then the five gallon steel container. Subsequently, the solvent-soaked rags that are used to wipe down a P.C.B. contaminated area should be placed in a plastic bag and also placed inside the P.C.B. container. When the basic clean-up of the surface materials has been completed, an electrician wearing suitable protective equipment should remove the contaminated ballast. The ballast should be placed in the five gallon container. The inside surfaces of light fixture should be cleaned with solvent and the rag also disposed of in the container. After clean-up, gloves and disposable coveralls should be placed in the container as well. After solvent cleaning, areas that were affected should be washed with soap and water. The five gallon container should be sealed and labeled as contained P.C.B. waste, and delivered to the Electrical Shop for storage.

These procedures are only intended to be a guideline to assist maintenance personnel in the clean-up and handling of potential P.C.B. contaminated lamp ballasts. If there is no reason to suspect that the failed lamp ballast is leaking P.C.B.'s, then it should be disposed of in accordance with current practice.

If maintenance personnel have any questions concerning the handling of P.C.B. waste and clean-up procedures to be followed, they should contact Occupational Health & Safety.

## BALLAST IDENTIFICATION

CGE/Westinghouse

Contain PCB prior to June 1977

CGE use two methods

1. Letter at end of #

e.g.: 17A 276 E  
          ↑  
          Non PCB

17A 276 T  
          ↑  
          May contain PCB

2. Date System (Date on back of ballast)

e.g.: 6704

Reversing first two numbers designates the year, the last two, the month

1976 4<sup>th</sup> month

Sola (USA)

1979 or before may contain PCB. Ballasts manufactured before F 80 (June 1980) may contain PCB

Date System (Stamped on ballast)

e.g.: 61 F 331 EG  
          ↑  
          1961 Month of June  
          June 61 therefore contain PCB

Sola (Canada)

Identification code first three hours

e.g.: “ACA” contains PCB  
      “ACB” does not contain PCB

Aerovox (capacitor) for H1D Lamps

Prior to June 1978 contain PCB

Date System (Stamped on capacitor)

Letters	AE – Made in Canada AH – Made in USA	
	AE	8252 – 1982 52 <sup>nd</sup> Week
	↑	↑
	Canadian made	1982 52 <sup>nd</sup> week
	AH	7808 – 1978 08 <sup>th</sup> Week
	↑	↑
	US made	2978 8 <sup>th</sup> week

Allanson Division (ballast)

Prior to January 1980 contain PCB

Date System

1<sup>st</sup> letter – months

e.g.: A – January, B-February, C-March, etc

2<sup>nd</sup> letter – years

e.g.: A-1970, B-1971, C-1972, etc.

e.g. : AM = January 1982

Phillips Electronic

Stopped using PCB 1979

Date system

e.g.: code 575  
↑

5th m. 1975

e.g. : 11 75  
↑

11th mo. 1975

After 1980 code change

e.g. : 80 62 17  
↑ ↑ ↑  
1980 52nd wk date

Universal Manufacturing Co.

Stopped placing PCB in ballasts in 1978

Ballast label clearly marked